

Practise

For help with questions 1 to 6, see Example 1.

- Translate each phrase into an algebraic expression.
 - seven less than twice a number
 - four more than half a value
 - a number decreased by six, times another number
 - a value increased by the fraction two thirds
- Translate each phrase into an algebraic expression.
 - twice a distance
 - twenty percent of a number
 - double a length
 - seven percent of a price
- Translate each sentence into an algebraic equation.
 - One fifth of a number, decreased by 17, is 41.
 - Twice a number, subtracted from five, is three more than seven times the number.
 - When tickets to a play cost \$5 each, the revenue at the box office is \$825.
 - The sum of the length and width of a backyard pool is 96 m.
- For each of the following, write a word or phrase that has the opposite meaning.

a) increased	b) added
c) plus	d) more than
- All of the words and phrases in question 4 are represented by the same operation in mathematics. What operation is it?
 - Work with a partner. Write four mathematical words or phrases for which there is an opposite. Trade your list with another pair in the class and give the opposites of the items in each other's list.

- Explain in your own words the difference between an expression and an equation. Explain how you can tell by reading whether words can be represented by an expression or by an equation. Provide your own examples.

For help with question 7, see Example 2.

- Which is the point of intersection of the lines $y = 3x + 1$ and $y = -2x + 6$?

A (0, 1)	B (1, 1)
C (1, 4)	D (2, 5)

For help with questions 8 and 9, see Example 3.

- Find the point of intersection for each pair of lines. Check your answers.

a) $y = 2x + 3$ $y = 4x - 1$	b) $y = -x - 7$ $y = 3x + 5$
c) $y = \frac{1}{2}x - 2$ $y = \frac{3}{4}x + 3$	d) $y = 4x - 5$ $y = \frac{2}{3}x + 5$
- Find the point of intersection for each pair of lines. Check your answers.

a) $x + 2y = 4$ $3x - 2y = 4$	b) $y + 2x = -5$ $y - 3x = 5$
c) $3x - 2y = 12$ $2y - x = -8$	d) $x - y = 1$ $x + 2y = 4$

For help with question 10, see Example 5.

- Use a graphing calculator or *The Geometer's Sketchpad*® to find the point of intersection for each pair of lines. Where necessary, round answers to the nearest hundredth.

a) $y = 7x - 23$ $y = -4x + 10$	b) $y = -3x - 6$ $y = -6x - 20$
c) $y = 6x - 4$ $y = -5x + 12$	d) $y = -3x + 4$ $y = 4x + 13$
e) $y = 5.3x + 8.5$ $y = -2.7x - 3.4$	f) $y = -0.2x - 4$ $y = -4.8x + 1$

Connect and Apply

- 11.** Fitness Club CanFit charges a \$150 initial fee to join the club and a \$20 monthly fee. Fitness 'R' Us charges an initial fee of \$100 and \$30/month.
- Write an equation to represent the cost of membership at CanFit.
 - Write an equation to represent the cost of membership at Fitness 'R' Us.
 - Graph the two equations.
 - Find the point of intersection.
 - What does the point of intersection represent?
 - If you are planning to join for 1 year, which club should you join? Explain your answer.
- 12.** LC Video rents a game machine for \$10 and video games for \$3 each. Big Vid rents a game machine for \$7 and video games for \$4 each.
- Write a linear equation to represent the total cost of renting a game machine and some video games from LC Video.
 - Write a linear equation to represent the total cost of renting a game machine and some video games from Big Vid.
 - Find the point of intersection of the two lines from parts a) and b).
 - Explain what the point of intersection represents in this context.
- 13.** Jeff clears driveways in the winter to make some extra money. He charges \$15/h. Hesketh's Snow Removal charges \$150 for the season.
- Write an equation for the amount Jeff charges to clear a driveway for the season.
 - Write an equation for Hesketh's Snow Removal.
 - What is the intersection point of the two linear equations?
 - In the context of this question, what does the point of intersection represent?
- 14. Use Technology** Brooke is planning a wedding. She compares the cost of places to hold the reception.
- Limestone Hall: \$5000 plus \$75/guest
Frontenac Hall: \$7500 plus \$50/guest
- Write an equation for the cost of Limestone Hall.
 - Write an equation for the cost of Frontenac Hall.
 - Use a graphing calculator to find if what number of guests the hall charges are the same.
 - In what situation is Limestone Hall expensive than Frontenac Hall? Explain.
 - What other factors might Brooke consider when choosing a banquet hall?
- 15. Use Technology** Gina works for a clothing designer. She is paid \$80/day plus \$3 for each pair of jeans she makes. Dexter also works for the designer, but he makes \$110/day and no extra money for finishing jeans.
- Write an equation to represent the amount that Gina earns in 1 day. Graph the equation.
 - Write an equation to represent the amount that Dexter earns in 1 day. Graph this equation on the same axes as in part a).
 - How many pairs of jeans must Gina make in order to make as much in 1 day as Dexter?
- 16.** Ramona has a total of \$5000 to invest. She puts part of it in an account paying 5%/year interest and the rest in a GIC paying 7.2% interest. If she has \$3400 in simple interest at the end of the year, how much was invested at each rate?